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Evaluating the effectiveness and user experience of a dietary assessment app for Dutch adolescents

Submission date
27/05/2024

Recruitment status
No longer recruiting

Registration date
05/06/2024

Overall study status
Completed

Last Edited
18/11/2025

Condition category
Nutritional, Metabolic, Endocrine

[_] Prospectively registered
[X] Protocol
[_] Statistical analysis plan
[_] Results
[_] Individual participant data
[_] Record updated in last year

Plain English summary of protocol

Background and study aims
Self-reported dietary intake data has played a key role in many breakthroughs in nutrition and health research. Nevertheless, dietary assessment is challenging due to various potential sources of error. Assessing dietary intake in adolescents is particularly difficult due to irregular eating habits, meal skipping, dining out, and parent or peer influences resulting in misreporting. Adolescents' receptiveness to technology offers new opportunities for dietary assessment amid the rapidly evolving tech landscape. In response, an innovative smartphone app (Traqq®) was developed for more flexible and easier dietary assessment than conventional tools. Evaluation studies of Traqq® in Dutch adults have shown successful results, but its suitability for other target populations requires further investigation. This study aims to evaluate Traqq®'s dietary assessment accuracy and usability and user perspectives among Dutch adolescents aged 12-18 years.

Who can participate?
Dutch adolescents aged 12 to 18 years old

What does the study involve?
At the start, participants complete a demographic questionnaire. The study lasts 4 weeks during which participants self-report food and beverage intake on 6 random non-consecutive days with 4 days via Traqq® and twice via interviewer-administered 24-hour recalls. After the 4-week study period, participants are invited to complete a Food Frequency Questionnaire and an online evaluation questionnaire. At the end of the study, a subgroup of participants will be asked for in-depth interviews. Finally, a new group will be invited to participate in co-creation sessions.

We do the following investigations and measurements:
Participants complete a number of questionnaires. The questions are about:
1. Demographic data (i.e. sex, age, education, etc) and lifestyle (sleep, diet, exercise/activities)
2. Evaluation questionnaire (i.e. ease of use, convenience, perceived reporting burden, perceived accuracy, likelihood of future use, and overall experience)
3. Food frequency questionnaire (i.e. dietary intake of the past month)

These questionnaires provide information about general characteristics, usability and experience of Traqq® and habitual diet.
Participants complete a number of recall days:
1. Participants report their dietary intake using Traqq® for 4 days
2. Participants are interviewed twice for a 24-hour recall
A subsample of participants will be asked to participate in an in-depth interview about the usability and experience of Traqq®, which will take about 40 minutes.
At the end of the study, a new group of participants will be asked to participate in co-creation sessions to further explore the usability and features of the Traqq® app.

What are the possible benefits and risks of participating?
The researchers do not expect any side effects or complications from participating in the study. Participants will fill out several questionnaires, report their dietary intake, and participate in an interview. While there are no direct benefits to participants, their involvement will contribute to valuable research.

Where is the study run from?
Wageningen University (Netherlands)

When is the study starting and how long is it expected to run for?
January 2022 to December 2025

Who is funding the study?
Wageningen University & Research (Netherlands)

Who is the main contact?
Elske Brouwer-Brolsma, elske.brouwer-brolsma@wur.nl

Contact information

Type(s)
Public, Scientific, Principal investigator

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Additional identifiers

Protocol serial number
2022-13477

Study information

Scientific Title
Traqq®-Z: evaluating the accuracy, usability, and user perspectives of an ecological momentary dietary assessment app among Dutch adolescents (ages 12-18 years)

Acronym
Traqq-Z

Study objectives
This study hypothesizes that integrating user-centered design principles into the development of a dietary assessment tool for Dutch adolescents will enhance both its accuracy and user compliance.

Ethics approval required
Ethics approval not required

Ethics approval(s)
The research participants are not subjected to Medical Scientific Research Involving Human Subjects Act (WMO)-mandated actions and no WMO-mandated conduct is imposed on them.

Primary study design
Observational

Study design
Observational single-centre mixed-method study

Study type(s)
Other

Health condition(s) or problem(s) studied
Dietary intake in adolescents

Interventions
Dietary intake is self-reported using Traqq® over a 2-week period, including four random (school)days. Two days involve repeated 2-hour recalls, and 2 days involve repeated 4-hour recalls. Two interviewer-administered 24-hour recalls and a Food Frequency Questionnaire are used as dietary reference methods. Traqq®'s usability is evaluated using the System Usability Scale and an evaluation questionnaire about experiences and interactions with the repeated short recalls and Traqq® app. Participants are interviewed to explore user perspectives. The next steps involve co-creation sessions to gather further user insights and preferences, and guide customization.

Intervention Type
Other

Primary outcome(s)

Food and beverage intake is assessed using the smartphone-based 2-hour recall and 4-hour recall method using Traqq®, and the interviewer-administered 24-hour recalls are used as a reference method, over a 4-week study period.

Key secondary outcome(s)
1. Baseline data assessed using a demographic questionnaire at week 1
2. Evaluation questionnaire about usability assessed using the System Usability Scale at week 5
2. Dietary intake as a reference method assessed using the Food Frequency Questionnaire at week 5
3. User experiences and preferences assessed using in-depth-interviews after the study period
4. User experiences and preferences assessed using co-creation sessions after the in-depth-interviews

Completion date
31/12/2025

Eligibility

Key inclusion criteria
1. Aged 12-18 years old
2. Able to speak and read Dutch
3. Willingness to maintain current dietary habits for the duration of the study
4. Own a smartphone with an internet plan
5. User of an email address

Participant type(s)
Healthy volunteer

Healthy volunteers allowed
No

Age group
Mixed

Lower age limit
12 Years

Upper age limit
18 Years

Sex
All

Total final enrolment
102

Key exclusion criteria
1. Visually impaired
2. Currently participating in another research study

Date of first enrolment
01/02/2022

Date of final enrolment
30/09/2022

Locations

Countries of recruitment
Netherlands

Study participating centre
Wageningen University
Helix, Stippeneng 4
Wageningen
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Sponsor information

Organisation
Wageningen University & Research

ROR
https://ror.org/04qw24q55

Funder(s)

Funder type
University/education

Funder Name
Wageningen University and Research

Alternative Name(s)
Wageningen University & Research, Wageningen University, WUR

Funding Body Type
Government organisation

Funding Body Subtype
Local government

Location
Netherlands

Results and Publications

Individual participant data (IPD) sharing plan
The datasets generated during and/or analysed during the current study will be available upon request from Elske Brouwer-Brolsma (elske.brouwer-brolsma@wur.nl)

IPD sharing plan summary
Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Protocol article		11/11/2025	18/11/2025	Yes	No
Participant information sheet	12 to 15 years version 1	19/01/2022	05/06/2024	No	Yes
Participant information sheet	16 to 18 years version 1	19/01/2022	05/06/2024	No	Yes
Participant information sheet	Parent/guardian version 1	19/01/2022	05/06/2024	No	Yes